

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 March 2002 (28.03.2002)

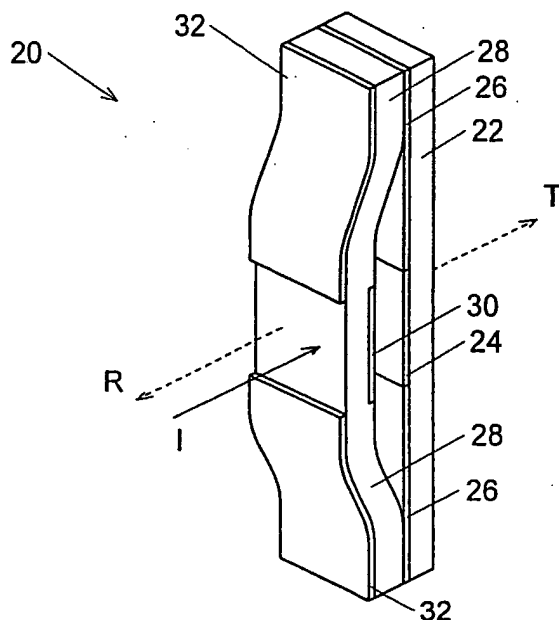
PCT

(10) International Publication Number
WO 02/025348 A3

- (51) International Patent Classification⁷: G02B 26/02, G01J 3/26
- (74) Agents: HAVERSTOCK, Thomas, B. et al.; Haverstock & Owens LLP, 162 North Wolfe Road, Sunnyvale, CA 94086 (US).
- (21) International Application Number: PCT/US01/28694
- (22) International Filing Date:
14 September 2001 (14.09.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
09/664,020 19 September 2000 (19.09.2000) US
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant: **SILICON LIGHT MACHINES** [US/US];
Suite 115, 385 Moffett Park Drive, Sunnyvale, CA 94089 (US).
- (72) Inventor: **GUDEMAN, Christopher**; 19148 Old Vineyard Road, Los Gatos, CA 95033 (US).
- Published:
— with international search report

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR INTERFEROMETRIC MODULATION OF LIGHT



(57) Abstract: An interferometric light modulator includes a base and a ribbon suspended above the base. The ribbon has a central region and first and second conducting regions located outside of the central regions. The base includes a second mirror located parallel and adjacent to the first mirror so that the first and second mirrors form an interferometric cavity. An electrical bias applied to the first and second conducting regions adjusts the interferometric cavity in order to modulate light which is incident upon the central region of the ribbon. In an alternative interferometric light modulator, the light is incident upon a second central region of the base.

WO 02/025348 A3

WO 02/025348 A3



(88) Date of publication of the international search report:
13 March 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

PCT/US 01/28694

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 G02B26/02 G01J3/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 G02B G01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 835 255 A (MILES MARK W) 10 November 1998 (1998-11-10) cited in the application	1-7,9, 11-21
Y	column 13, line 25 - line 64 column 17, line 66 - column 18, line 6 column 19, line 56 - line 60 figure 20	8,10
Y	WO 99 34484 A (CORETEK INC) 8 July 1999 (1999-07-08) page 10, paragraph 1	8,10
A	US 4 859 060 A (HIJIKIGAWA MASAYA ET AL) 22 August 1989 (1989-08-22) column 11, line 17 - line 25	1,16,17

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

2 December 2002

Date of mailing of the international search report

11/12/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Jacquin, J

PCT/US 01/28694

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5835255	A	10-11-1998	EP 0801766 A1	22-10-1997
			JP 10500224 T	06-01-1998
			US 2002054424 A1	09-05-2002
			US 2002149828 A1	17-10-2002
			US 2002126364 A1	12-09-2002
			WO 9530924 A1	16-11-1995
			US 6055090 A	25-04-2000
			US 6040937 A	21-03-2000
			US 5986796 A	16-11-1999
			US 2002015215 A1	07-02-2002
			US 2002075555 A1	20-06-2002
WO 9934484	A	08-07-1999	US 2002031155 A1	14-03-2002
			AU 2017499 A	19-07-1999
			CA 2316858 A1	08-07-1999
			CN 1285034 T	21-02-2001
			EP 1053574 A2	22-11-2000
			JP 2002500446 T	08-01-2002
			WO 9934484 A2	08-07-1999
			US 2002061042 A1	23-05-2002
US 4859060	A	22-08-1989	JP 1755324 C	23-04-1993
			JP 4046369 B	29-07-1992
			JP 62257032 A	09-11-1987
			JP 62265545 A	18-11-1987
			JP 62126303 A	08-06-1987
			JP 1707430 C	27-10-1992
			JP 3075801 B	03-12-1991
			JP 62144033 A	27-06-1987
			DE 3640340 A1	27-05-1987
			DE 3645238 C2	07-11-1996
			GB 2186708 A ,B	19-08-1987
			GB 2217839 A ,B	01-11-1989